Supplementary material

Table S1. GBIF the DOI of the downloaded data.

Table S2. Detailed survey locations.

Table S3. Evaluation metrics of MaxEnt model generated by ENMeval.

Table S4. Location of the centroid shift and migration distance of *Prunus* subg. *Amygdalus*. under different climate scenarios.

Figure S1. Study framework diagram.

Figure S2. Heat map of correlation between 29 environmental variables.

Figure S3. ROC curve for *Prunus* subg. *Amygdalus.* using the MaxEnt model. *P. amygdalus* (a), *P. tenella* (b), *P. pedunculata* (c), *P. mongolica* (d), *P. tangutica* (e) and *P. triloba* (f).

Figure S4. Response curves for key environmental predictors in the species distribution model for *P. amygdalus*. (a) BIO2, (b) BIO6, (c) BIO8, (d) BIO16, (e) BIO19, (f) UVB2, (g) UVB4. (The red line represents the average value of all candidate models, and the blue range indicates the standard deviation, the same below).

Figure S5. Response curves for key environmental predictors in the species distribution model for *P. tenella*. (a) BIO2, (b) BIO11, (c) BIO12, (d) BIO14, (e) BIO15, (f) UVB4, (g) SpH.

Figure S6. Response curves for key environmental predictors in the species distribution model for *P. pedunculata*. (a) BIO13, (b) BIO14, (c) BIO15, (d) BIO19, (e) UVB4, (f) Slope, (g) SpH.

Figure S7. Response curves for key environmental predictors in the species distribution model for *P. mongolica*. (a) BIO4, (b) BIO14, (c) BIO18, (d) BIO19, (e) DEM.

Figure S8. Response curves for key environmental predictors in the species distribution model for *P. tangutica*. (a) BIO9, (b) BIO14, (c) BIO18, (d) BIO19, (e) DEM.

Figure S9. Response curves for key environmental predictors in the species distribution model for *P. triloba*. (a) BIO1, (b) BIO2, (c) BIO14, (d) BIO15, (e)

BIO18, (f) BIO19 ,(g) DEM, (h) Slope.

Figure S10. Future species distribution models (SDMs) of *Prunus* subg. *Amygdalus.* under climate change scenarios SSP585. Dark blue, light blue, green and red indicate no suitability, low suitability, medium suitability and high suitability respectively.

Figure S11. Distribution changes of ssp5.85 in the future climate scenario of *Prunus* subg. *Amygdalus*. compared to the current. Dark blue, light blue, green and red indicate no occupancy, range expansion, no changed and range contraction respectively.

Table S1. GBIF the DOI of the downloaded data.

species	GBIF Occurrence Download
P. amygdalus	https://doi.org/10.15468/dl.dpscnp
P. tenella	https://doi.org/10.15468/dl.hw73qh
P. pedunculata.	https://doi.org/10.15468/dl.y6x948
P. mongolica	https://doi.org/10.15468/dl.7jjfet
P. tangutica	https://doi.org/10.15468/dl.tnbv2j
P. triloba	https://doi.org/10.15468/dl.p42we6

Table S2. Detailed survey locations.

species	place	longitude	latitude	date
P. amygdalus	XJ kashidiqu shachexian tuomuwusitangxiang	77°12′25.71″	38°25′11.20″	July - September 2020
	XJ kashidiqu shachexian erlinchang	77°08′18.95″	38°12′2.40″	July - September 2020
	XJ kashidiqu shachexian tuomuwusitangxiang	77°13′52.69″	38°21′51.28″	July - September 2020
	XJ hetiandiqu hetianshi taibeixilu	79°55′14.5″	37°7′15.7″	July - September 2020
	XJ kashi shachexian gulebagezhen	77°16′46.3″	38°25′33.2″	July - September 2020
	XJ kashi yingjishaxian mangxinxiang	76°11′11.7″	38°55′24.5″	July - September 2020
	XJ kashis hufuxian tuokezhakezhen	75°52′5.3″	39°22′1.9″	July - September 2020
	XJ kashi yechengxian jiefangnanlupang	77°24′46.5″	37°52′22.1″	July - September 2020
	XJ kashi zepuxian 488 xiandaofujian	77°15′40.8″	38°12′1.4″	July - September 2020
	XJ kashi yingjoxian 315 guodaofujin	76°10′32.6″	38°55′49.4″	July - September 2020
	XJ kashi yingjishaxian 315 guodaofujin	76°10′56.2″	38°53′56.1″	July - September 2020
	XJ kashi yawajiedao	75°58′28.3″	39°32′54.5″	July - September 2020
	XJ atushiahuxiang jimitilalupang	76°9′6.2″	39°44′29.4″	July - September 2020
	XJ pishanxian mukuilaxiang	78°16′14.4″	37°27′50.1″	July - September 2020
	XJ kashi yechengxian qipanxiang	77°2′50.5″	37°47′49″	July - September 2020
	XJ akesuwushenxian yingawatixiang	79°40′7.8″	41°30′3.8″	July - September 2020
	XJ shulexian barenxiang	76°3′30″	39°22′21″	July - September 2020
	XJ yechengxian tietixiang	77°23′50.3″	37°49′2.5″	July - September 2020
	XJ zepuxian kehelupang	77°16′21.5″	38°10′17.5″	July - September 2020
	XJ hetian gujiangbagexiang yingbinlupang	79°54′53.5″	37°5′31.7″	July - September 2020
	XJ wensuxian tuohulaxiang huanchenglupang	80°13′24.6″	41°16′54.9″	July - September 2020
	XJ kashidiqu deshachexian	77°24′20.28″	38°24′1.41″	July - September 2020
	XJ kashidiqu yingjishaxian	76°08′55.08″	38°55′8.09″	July - September 2020
	XJ kashidiqu yingjixian yigeziyeerxiang	76°09′4.44″	38°37′23.95″	July - September 2020
	XJ wulumuqishi tianshanqu tianshanlupang	87°37′37.4″	43°47′36.2″	July - September 2020
	XJ kashi areyalupang	75°59′23″	39°28′13.4″	July - September 2020
	XJ kashi shachexian aisitipierlupang	77°14′45.3″	38°25′5.6″	July - September 2020
	XJ shachexian chengguanqu sangongshesandadui	77°26′23.8″	38°58′19.00″	July - September 2020
	XJ shachexian chengguanqu sangongshebadadui	77°47′29.3″	39°42′46.36″	July - September 2020
P. tenella	XJ tachengyuminxian dijiushiyiliuyituanshiyilianhexinqu	82°30′47″	45°54′14″	July - September 2020
	XJ tachengyuminxian dijiushiyiliuyituanshiyilianwaiwei	82°30′41″	45°54′30″	July - September 2020
	XJ tachengyuminxian dijiushiyiliuyituanshiyilian	82°30′47″	45°54′29″	July - September 2020
	XJtachengyuminxianchahantuohaimuchangchahantuohaicun	82°42′44″	46°06′26″	July - September 2020
	XJ tachengdiqutuolixiankupucun	82°40′22″	45°12′38″	July - September 2020
	XJ tachengxiantaerbahataishan	83°06′2.40″	47°13′34.99″	July - September 2020
	XJ yuminxian baerlukeshanxibu1	82°45′36.20″	45°44′37.21″	July - September 2020
	XJ yuminxian baerlukeshanxibu2	82°30′11″	45°53′60.00″	July - September 2020
	XJ baerlukeshan dongbeibulaofengkou1	83°36′36.86″	46°10′25.49″	July - September 2020
	XJ baerlukeshan duolatigou	82°45′47.4″	44°19′53.68″	July - September 2020
	XJ buerjinxian woyimokexiang1	86°51′47.2″	47°41′55.94″	July - September 2020
	XJ buerjinxian woyimokexiang2	86°48′42″	47°42′7.2″	July - September 2020
	XJ tachengwoyijiayilaomuchang	83°1′12.1″	47°3′3.5″	July - September 2020
	XJ buerjinxianchonghuerzheng	87°6′12.3″	48°11′4.3″	July - September 2020
	XJ habahexianjiayilemaxiang	86°34′9.1″	48°18′2.9″	July - September 2020
	XJ tachengyebiantaoziranbaohuqu	82°30′32.9″	45°54′35.7″	July - September 2020
	XJ buerjinxianchonghuerzhenglinchang	87°7′18.7″	48°11′48.2″	July - September 2020
	XJ baerlukeshandongbeibulaofengkoulinchang1	83°36′49.9″	46°10′32.9″	July - September 2020
	XJ baerlukeshandongbeibulaofengkoulinchang2	83°32′7.5″	46°8′56.5″	July - September 2020
	XJ baerlukeshandongbeibulaofengkou2	83°36′45.19″	46°10′53.47″	July - September 2020
	XJ buerjinaertaishan xinanbushanlu	87°6′12.3″	48°11′4.3″	July - September 2020
	XJ aertaishan xibeibukongdunlinshanlu	86°34′9.1″	48°18′2.9″	July - September 2020
	XJ tachengtaer bahataishan dongbu	83°1′12.1″	47°3′3.5″	July - September 2020
	XJ tuolibaer lukeshan dongbu	83°33′11.2″	46°9′2.3″	July - September 2020
	XJ tuolixian kekepuqikenanlu	83°36′22.3″	45°56′12.3″	July - September 2020
	XJ habahexian jiayilamaxiang kongdunlinshanlu	86°34′21.1″	48°18′0.9″	July - September 2020
	XJ baheliuyu kongdunlinshanlu	86°30′21.9″	48°17′40.5″	July - September 2020
	XJ tachengdiqu shawanxian xigebikezibieti	85°28′14″	44°5′20.1″	July - September 2020
	XJ kuchexian talimuxiang halake	83°47′52″	41°5′41.7″	July - September 2020

	XJ eminxian jiaoqu xiangjiaodongcunxi	83°38′46″	46°31′59.8″	July - September 2020
	XJ wulumuqishi toutunhequ sanpingnongchang	87°17′9.58″	43°56′13.23″	July - September 2020
	XJ tachengshi guminxian baerlukeshan	82°45′36.20″	45°44′40.4″	July - September 2020
	XJ tachengtuolixian 1	83°33′11.2″	46°9′2.3″	July - September 2020
	XJ tachengtuolixian 2	83°42′1.21″	45°59′30.17″	July - September 2020
	XJ habahexian	86°21′45.20″	48°03′54.73″	July - September 2020
	XJ buerjinxian	86°51′50.16″	47°41′4.31″	July - September 2020
	XJ yuminxian	82°48′9.06″	46°05′51.02″	July - September 2020
	XJ tachengeminxian beishan	83°36′22.93″	46°53′33.66″	July - September 2020
P. mongolica	NMG helanshan halawubeigoushatangzi	105°54′35.78″	38°51′59.75″	July - September 2020
	NMG helanshan wugou	105°53′48.75″	38°51′55.28″	July - September 2020
	NMG helanshan yanhua	106°01′0″	38°43′60.00″	July - September 2020
	NMG helanshan fuyinsi(beisi)	105°52′12.93″	38°58′49.22″	July - September 2020
	NMG helanshan1	105°50′11.70″	38°51′26.34″	July - September 2020
	NMG helanshan2	105°51′33.00″	38°50′8.00″	July - September 2020
	NMG helanshan3	105°48′4.00″	38°39′35.00″	July - September 2020
	NMG gutoudao huluozishan	105°06′34.88″	38°03′15.60″	July - September 2020
	NMG huhehaoteshi daqingshan1	110°45′29.29″	40°41′14.74″	July - September 2020
	NMG huhehaoteshi daqingshan2	111°04′15.18″	40°54′20.24″	July - September 2020
	NMG baotoushi daqingshan3	109°54′11.58″	40°43′22.08″	July - September 2020
	NMG yabulaishan	103°02′25.15″	39°37′41.16″	July - September 2020
	NMG yabulaigebi	103°32′60.00″	40°17′60.00″	July - September 2020
	NMG wulateqianqi wulashan1	109°26′16.71″	40°43′35.85″	July - September 2020
	NMG wulateqianqi wulashan2	109°20′17.13″	40°43′58.88″	July - September 2020
	NMG baotou wulashan4	109°47′13.09″	40°41′31.41″	July - September 2020
	NMG jinluandianshan	111°16′23.27″	40°50′22.65″	July - September 2020
	NMG shalaxibie	104°57′34.06″	41°12′29.19″	July - September 2020
	NMG xieerduosi	107°57′56.83″	39°05′50.60″	July - September 2020
	NMG temowulagacha	104°56′14.70″	37°48′54.48″	July - September 2020
	NMG zuoqitukemugacha	105°42′43.02″	40°24′1.44″	July - September 2020
	NMG wusutusuhaitu	106°35′0.66″	39°32′13.32″	July - September 2020
	NMH wusutudamailigou	106°38′1.02″	39°23′20.22″	July - September 2020
	NMG wulatezhongqi wujiahezhen	107°34′58.43″	41°17′36.19″	July - September 2020
	NMG wulatehouqi dabakou	107°0′43.08″	41°04′11.82″	July - September 2020
	NMG wuhai qianligou1	107°0′43.00″	39°50′21.00″	July - September 2020
	NMG wuhai qianligou2	106°55′60.00″	39°53′60.00″	July - September 2020
	NMG wuhai qianligou3	106°55′46.00″	39°51′11.00″	July - September 2020
	NMG wuhai qianligou4	106°59′11.00″	39°55′46.00″	July - September 2020
	NMG wuhai qianligou5	107°00′43″	39°50′21″	July - September 2020
	NMG bayannuo rigong1	105°07′41.00″	39°55′23.00″	July - September 2020
	NMG bayannuo rigong2	104°47′60.00″	40°10′0″	July - September 2020
	NMG bayannuo rigongsumuxiang	104°48′55.98″	40°09′52.55″	July - September 2020
	NMG alashan luanjingtan	105°13′35.00″	38°12′34.00″	July - September 2020
	NMG baotoushi zhaochangcheng	110°09′27.00″	40°42′47.00″	July - September 2020
	NMG baotoushi zhaochangcheng2	110°08′40.48″	40°43′0.47″	July - September 2020
	NMG baotou jiufengshan	110°34′60.00″	40°36′0″	July - September 2020
	NMG dongsheng miaonarenwula	107°05′60.00″	41°19′0″	July - September 2020
	NMG wuyishuiku2	111°26′43.00″	40°45′47.00″	July - September 2020
	NMG wuyishuiku1	111°25′60.00″	40°45′0″	July - September 2020
	NMG jilantaiaolongaobao	105°44′40.60″	40°15′48.60″	July - September 2020
	NMG luanjingtanwulanxianji	105°13′0.51″	38°13′35.70″	July - September 2020
	NMG aolunbulage	106°58′47.00″	40°41′43.00″	July - September 2020
	NMG sumutu	109°46′4.00″	40°54′15.00″	July - September 2020
	NMG meiligeng	109°26′40.00″	40°39′36.00″	July - September 2020
	NMG kundulun	109°47′41.00″	40°53′33.00″	July - September 2020
	NMG shilanji	107°49′18.00″	41°31′16.00″	July - September 2020
	NMG wujiahe	108°09′53.00″	41°17′45.00″	July - September 2020
	NMG balagong	107°15′1.00″	40°17′4.00″	July - September 2020
	NMG guzhanggan	108°32′9.00″	38°38′54.00″	July - September 2020
	NMG guzongbieli	106°05′27.00″	39°14′33.00″	July - September 2020
	NMG tukemu	105°25′59.00″	40°34′7.00″	July - September 2020

	NMG wulanquanji	105°06′42.00″	38°09′27.00″	July - September 2020
	NMG badanjilinshamo	102°07′28.24″	40°55′25.92″	July - September 2020
	NMG baotou guyangpayushu	110°14′0.18″	40°48′24.64″	July - September 2020
	NMG baotou guyanghujigou	110°04′5.48″	40°50′45.41″	July - September 2020
	NMG alashanzuoqinuorigong	105°07′41″	39°55′23″	July - September 2020
	NMG alashanzuoqijilantai1	105°45′16.07″	39°45′19.10″	July - September 2020
	NMG alashanzuoqijilantai2	105°45′42.02″	39°45′22.72″	July - September 2020
	NMG baotoushi jiuyuanquerlaohugoy	109°54′20.80″	40°43′44.23″	July - September 2020
	GS hegangshan	107°32′6.11″	36°29′3.54″	July - September 2020
	GS duqingshan	102°18′58.32″	38°18′33.15″	July - September 2020
	GS yunshan	105°47′14.55″	34°45′32.25″	July - September 2020
	GS dahequ	99°36′32.83″	38°50′14.94″	July - September 2020
	GS beishan	101°07′52.41″	38°51′54.14″	July - September 2020
	GS qilianshan	101°49′45.48″	38°09′18.60″	July - September 2020
	GS longshoushan1	101°11′24.06″	38°47′24.00″	July - September 2020
	GS longshoushan2	100°57′37.00″	38°58′7.00″	July - September 2020
	GS hongguanyan	104°09′27.00″	37°06′42.00″	July - September 2020
	NX helanshan suyugu	105°55′38.72″	38°44′50.76″	July - September 2020
	NX helanshan xiaokouzi	105°55′43.04″	38°36′19.00″	July - September 2020
	NX helanshansanqingguan	105°56′29.65″	38°44′25.66″	July - September 2020
	NX biandangou	118°40′45.00″	41°53′53.00″	July - September 2020
	NX shitangou	105°58′7.00″	36°57′37.00″	July - September 2020
	NX gunzhongkou	105°57′2.00″	38°36′12.00″	July - September 2020
	NX suyukou	105°54′15.00″	38°46′4.00″	July - September 2020
P. tangutica	SC maerkangxian songgangmuzugoukou	101°58′34.5″	31°45′47.3″	July - September 2020
	SC maerkangxian songgang	102°6′34.7″	31°55′12.7″	July - September 2020
	SC maerkangxian xiagonglubian	102°12′23.1″	31°54′21″	July - September 2020
	SC maerkangxian fujin	101°42′25.4″	31°51′31.7″	July - September 2020
	SC maerkangxian dengjiaqiao	102°7′57.7″	31°55′52.6″	July - September 2020
	SC heishuixian seerguquxiang	103°25′16.7″	31°56′8.4″	July - September 2020
	SC songpanxian shibazi	103°34′46.7″	32°31′45″	July - September 2020
	SC maerkangxian songgangdaermagouwaixibian	102°6′34.7″	31°55′12.7″	July - September 2020
	SC maoxian 1	103°51′12.7″	31°40′52.2″	July - September 2020
	SC maoxian 2	103°51′14.9″	31°40′49.8″	July - September 2020
	SC maoxian sanlongxian	103°32′40.5″	31°47′30″	July - September 2020
	SC maoxian xibeibulixian	103°50′32.9″	31°40′39.2″	July - September 2020
	SC maerkangxian songgang	102°6′33.5″	31°55′15.6″	July - September 2020
	SC maerkangxian dengjiaqiao	102°7′57.3″	31°55′52.3″	July - September 2020
	SC maerkangxian songgang	102°6′34.7″	31°55′12.7″	July - September 2020
	SC heishuixian seerguquxiang	103°25′15.4″	31°56′9.2″	July - September 2020
	GS minxian luodaxiang zhuliqi 1	103°56′5.2″	34°0′47.9″	July - September 2020
	GS minxian luodaxiang zhuliqi 2	103°56′1.8″	34°0′51.3″	July - September 2020
	SC abazhou songpanxian	103°35′56.1″	32°38′17.2″	July - September 2020
	SC abazhou jiuzhaigouxian	103°55′36″	33°11′6.8″	July - September 2020
	SC kangdingxian	101°57′32″	29°58′20.3″	July - September 2020
	SC rangtangxian	100°58′42″	32°16′1.5″	July - September 2020
	SC abazhousongpanxian anhongxiang	103°38′31.2″	32°30′20.6″	July - September 2020
	SC abazhoujiuzhaigouxian baihexiang	104°5′54.3″	33°20′0.5″	July - September 2020
	SC abazhoujiuzhaigouxian heihexiang	104°0′29.4″	33°30′29.6″	July - September 2020
	SC abazhoujiuzhaigouxian anlexiang	104°13′47.4″	33°16′54″	July - September 2020
	SC abazhoujiuzhaigouxian zhangzhazhen	103°52′32.9″	33°17′21.1″	July - September 2020
	GS gannanzhou diebuxian 1	103°13′18.2″	34°3′21.1″	July - September 2020
	GS gannanzhou diebuxian 2	103°12′54.39″	34°02′43.47″	July - September 2020
	GS yunshanxiang	105°47′39.8″	34°45′33.8″	July - September 2020
	GS zhouquxian taozhoulinqunei	104°14′9.3″	33°53′22.3″	July - September 2020
	GS gannanzhou zhouquxian 1	104°22′16.4″	33°47′33.4″	July - September 2020
	GS gannanzhou zhouquxian 2	104°21′51.72″	33°44′34.37″	July - September 2020
	GS longnanshiwenxian	104°41′0.3″	32°56′38.2″	July - September 2020
	GS gannanzhou xiahexian	102°31′0.16″	35°12′23.40″	July - September 2020
	GS gannanzhouz huonixian	103°30′23.18″	34°34′8.92″	July - September 2020
	GS gannanzhou luquxian	102°29′13.01″	34°34′33.75″	July - September 2020

	GS gannanzhoul intanxian	103°20′23.03″	34°41′26.33″	July - September 2020
	GS dingxishiminxian	104°01′51.35″	34°27′18.96″	July - September 2020
	GS longnanshi dangchangxiang	104°22′1.84″	34°02′55.30″	July - September 2020
	GS tianshuishi wushanxian	104°50′19.31″	34°42′18.34″	July - September 2020
	GS tianshuishi wushanxian yupanxiang mahelinchang	104°52′53.52″	34°46′47.68″	July - September 2020
	GS diebuxian jiaina 1	103°23′01″	34°00′57″	July - September 2020
	GS diebuxian jiaina 2	103°22′57″	34°01′3″	July - September 2020
	GS diebuxian jiaina 3	103°22′56″	34°01′07″	July - September 2020
	QH xiningshi datongxian hualinxiang	101°43′14.06″	37°01′45.85″	July - September 2020
	SX lintongxian	109°3′10.9″	34°30′16.2″	July - September 2020
P. pedunculata	SX yulinshi shenmushi gaojiapuzheng	110°7′51″	38°33′5″	July - September 2020
	SX yulinshi shenmushi jinjiezheng chougou	110°1′20″	38°52′13″	July - September 2020
	SX yulinshi yuyangqu1	109°12′55″	38°27′2″	July - September 2020
	SX yulinshi yuyangqu2	109°12′19″	38°26′26″	July - September 2020
	SX yulinshi yuyangqu bulanghexiang	109°6′33″	38°21′3″	July - September 2020
	SX yulinshi yuyangqu3	109°12′19″	38°27′2″	July - September 2020
	SX yulinshi yuyangqu4	109°12′24″	38°26′53″	July - September 2020
	SX yulinshi yuyangqu mengjiawanxiang	110°6′16″	38°53′16″	July - September 2020
	SX yulinshi yuyangqu sidaohezexi 400m	109°40′30″	38°32′48″	July - September 2020
	SX yulinshi yuyangqu5	109°40′48″	38°32′21″	July - September 2020
	SX yulinshi yuyangqu6	109°34′59″	38°41′42″	July - September 2020
	SX yulinshi yuyangqu7	109°43′20″	38°30′53″	July - September 2020
	NMG eerduosishi etuokeqi	107°56′10″	39°6′19″	July - September 2020
	NMG huhehaoteshi lingeerxian	111°51′39″	40°23′54″	July - September 2020
	NMG baotoushi guyangxian yinhaozheng	110°31′10″	41°5′44″	July - September 2020
	NMG baotoushi guyangxian jinshanzheng1	110°12′30″	40°50′55″	July - September 2020
	NMG baotoushi guyangxian xiashihaozheng1	110°23′32″	40°58′27″	July - September 2020
	NMG baotoushi guyangxian	110°11′40″	40°58′19″	July - September 2020
	NMG baotoushi guyangxian xingshunxizheng	110°3′0″	41°6′53″	July - September 2020
	NMG baotoushi guyangxian jinshanzzheng2	110°0′59″	41°1′18″	July - September 2020
	NMG baotoushi guyangxian xiashihaozheng2	110°22′34″	40°58′18″	July - September 2020
	NMG huhehaoteshi tumotezuoqi chasuqizheng shuiquancun	111°4′49″	40°46′51″	July - September 2020
	NMG baotoushi guyangxian jinshanzzheng xishengdian	110°5′8″	40°46′17″	July - September 2020
	NMG baotoushi shiguaiqu wudangzhaozheng hangoucun	110°17′6″	40°40′45″	July - September 2020
	NMG huhehaoteshi tumotezuoqi chasuqizheng xigou	111°6′8″	40°45′14″	July - September 2020
	NMG baotoushi guyangxian jinshanzheng shanxigoudian	110°6′22″	40°46′17″	July - September 2020
	NMG baotoushi guyangxian jinshanzheng yangchang	110°6′1″	40°45′37″	July - September 2020
	NMG baotoushi guyangxian jinshanzheng xiaoba	110°5′46″	40°45′5″	July - September 2020
	NMG bayannaoershi wulateqianqi baiyanhuazheng dayebei	109°24′41″	40°42′11″	July - September 2020
	NMG baotoushi shiguaiqu	110°18′22″	40°46′54″	July - September 2020
	NMG baotoushi jiuyuanqu	109°50′18″	40°31′42″	July - September 2020
	NMG baotoushi daerhanmaominganjianheqi	110°29′59″	41°41′40″	July - September 2020
	NMG baotoushi eerduosishi etuokeqi wulanzheng	107°57′39″	39°5′37″	July - September 2020
	NMG baotoushi guyangxian yinghaozheng damiaocun	110°31′6″	41°5′35″	July - September 2020
	NMG bayannaoershi wulateqianqi	109°20′9″	40°43′54″	July - September 2020
P. triloba	XJ alaershi	117°13′33″	40°23′12″	July - September 2020
	XJ yilidiquhuochengxiandaxigouyeguolin	83°37′30″	43°24′46″	July - September 2020
	XJ aertaishannanbuerjingxian	87°48′7″	48°49′37″	July - September 2020
	NMG huhehaoteshi helinerxian	111°52′5″	40°24′25″	July - September 2020
	NMG eerduosishi wushenqi	108°49′54″	38°36′34″	July - September 2020
	NMG eerduosishi wushenqi wudinghezheng1	108°49′57″	38°6′15″	July - September 2020
	NMG daqingshan nancce	116°11′4″	40°0′46″	July - September 2020
	NMG eerduosishi wushenqi wudinghezheng2	108°49′58″	38°6′15″	July - September 2020
	NMG huhehaoteshi	111°28′34″	41°30′55″	July - September 2020
	SX yulinshi	109°42′9″	38°16′58″	July - September 2020
	GS zhangyeshisunanxian1	99°37′32″	38°50′43″	July - September 2020
	GS zhangyeshisunanxian2	100°27′46″	38°55′16″	July - September 2020
	GS zhengningxian	108°35′3″	35°26′58″	July - September 2020

Table S3. Evaluation metrics of MaxEnt model generated by ENMeval.

Species	**Parameter Settings**	**Regularization Multiplier**	**Feature Combination**	**∆.AICc**	**auc.diff.avg**
P. amygdalus	Optimized	1.0	LQPH	0	1.9321185
P. tenella	Optimized	0.5	LQT	0	1.9534023
P. pedunculata.	Optimized	0.5	LQ	0	1.9205236
P. mongolica	Optimized	3.7	LQPH	0	1.9451837
P. tangutica	Optimized	3.9	LQT	0	1.8769661
P. triloba	Optimized	0.9	LQT	0	1.8912563

Table S4. Location of the centroid shift and migration distance of *Prunus* subg. *Amygdalus.* under different climate scenarios.

Species	Period	Migration Distance of Centroid Shift (m)	Latiude (°)	Longitude (°)
P. amygdalus	Current	-	17.301415	6.901513
	2050-ssp2.45	392481	20.801423	7.351204
	2050-ssp5.85	443170	20.901436	5.102436
	2070-ssp2.45	131753	20.310121	6.201213
	2070-ssp5.85	280898	20.910203	2.401245
P. tenella	Current	-	48.550123	6.102632
	2050-ssp2.45	268882	48.201416	9.701236
	2050-ssp5.85	47052	48.180123	6.410211
	2070-ssp2.45	221964	48.180215	6.710245
	2070-ssp5.85	283322	48.061203	2.601423
P. pedunculata	Current	-	28.801214	87.901232
	2050-ssp2.45	562323	31.412131	92.901224
	2050-ssp5.85	1122282	32.210231	98.921036
	2070-ssp2.45	405217	32.114125	97.102512
	2070-ssp5.85	493413	31.010123	93.910213
P. mongolica	Current	-	40.552326	100.041215
	2050-ssp2.45	2120205	48.010204	75.401205
	2050-ssp5.85	2088750	47.012415	75.501235
	2070-ssp2.45	293191	47.012413	79.010412
	2070-ssp5.85	398815	46.010206	80.500213
P. tangutica	Current	-	46.412013	93.452105
	2050-ssp2.45	358107	47.020506	98.060215
	2050-ssp5.85	505140	46.621024	100.041213
	2070-ssp2.45	152492	46.712316	100.012514
	2070-ssp5.85	146486	46.750204	101.950231
P. triloba	Current	-	37.610252	29.102516
	2050-ssp2.45	152643	36.801236	27.712423
	2050-ssp5.85	405051	36.210235	24.901526
	2070-ssp2.45	536849	35.810241	21.854695
	2070-ssp5.85	35110	36.412524	24.601223

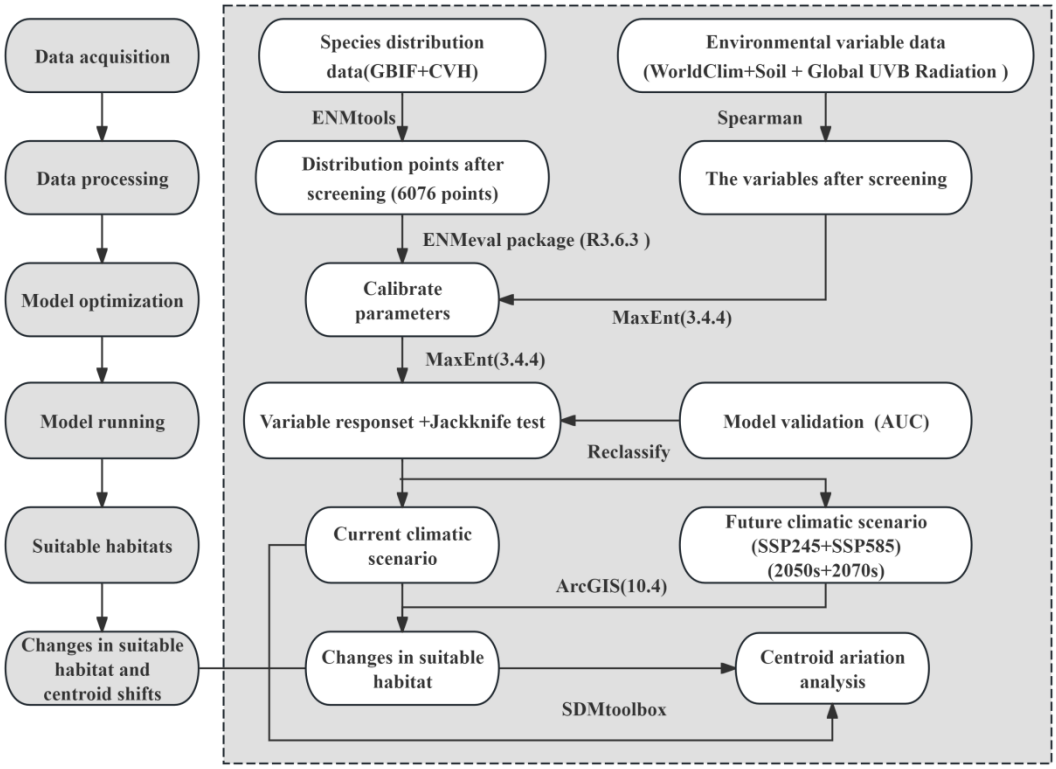


Figure S1. Study framework diagram.

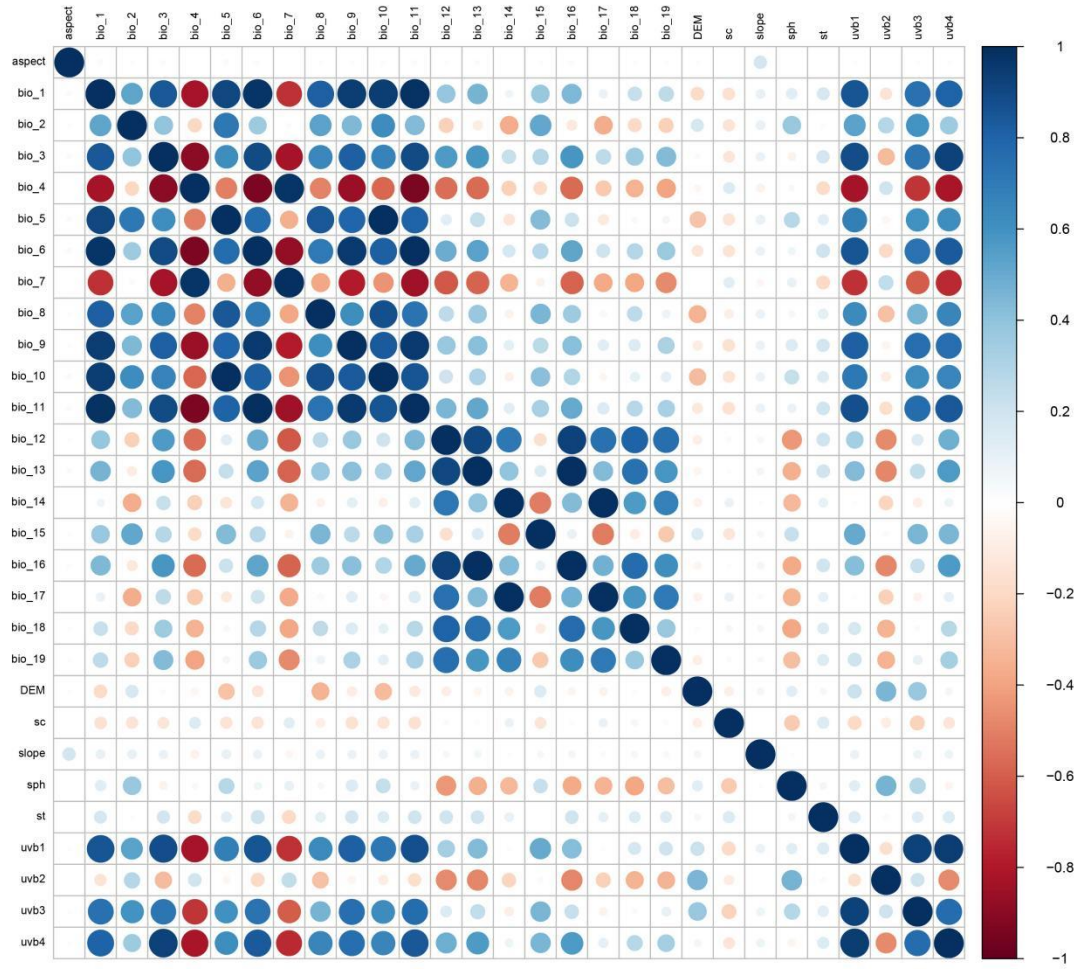


Figure S2. Heat map of correlation between 29 environmental variables.

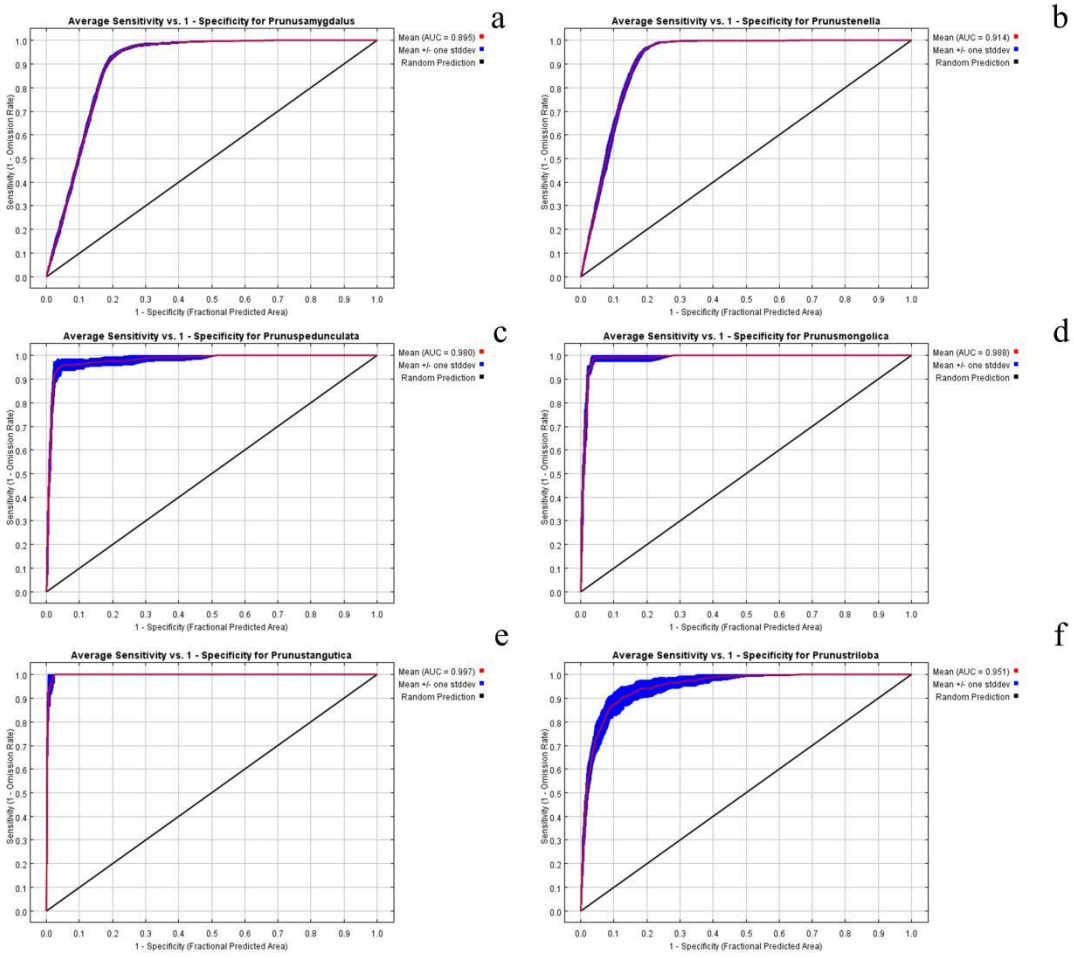


Figure S3. ROC curve for *Prunus* subg. *Amygdalus.* using the MaxEnt model. *P. amygdalus* (a), *P. tenella* (b), *P. pedunculata* (c), *P. mongolica* (d), *P. tangutica* (e) and *P. triloba* (f).

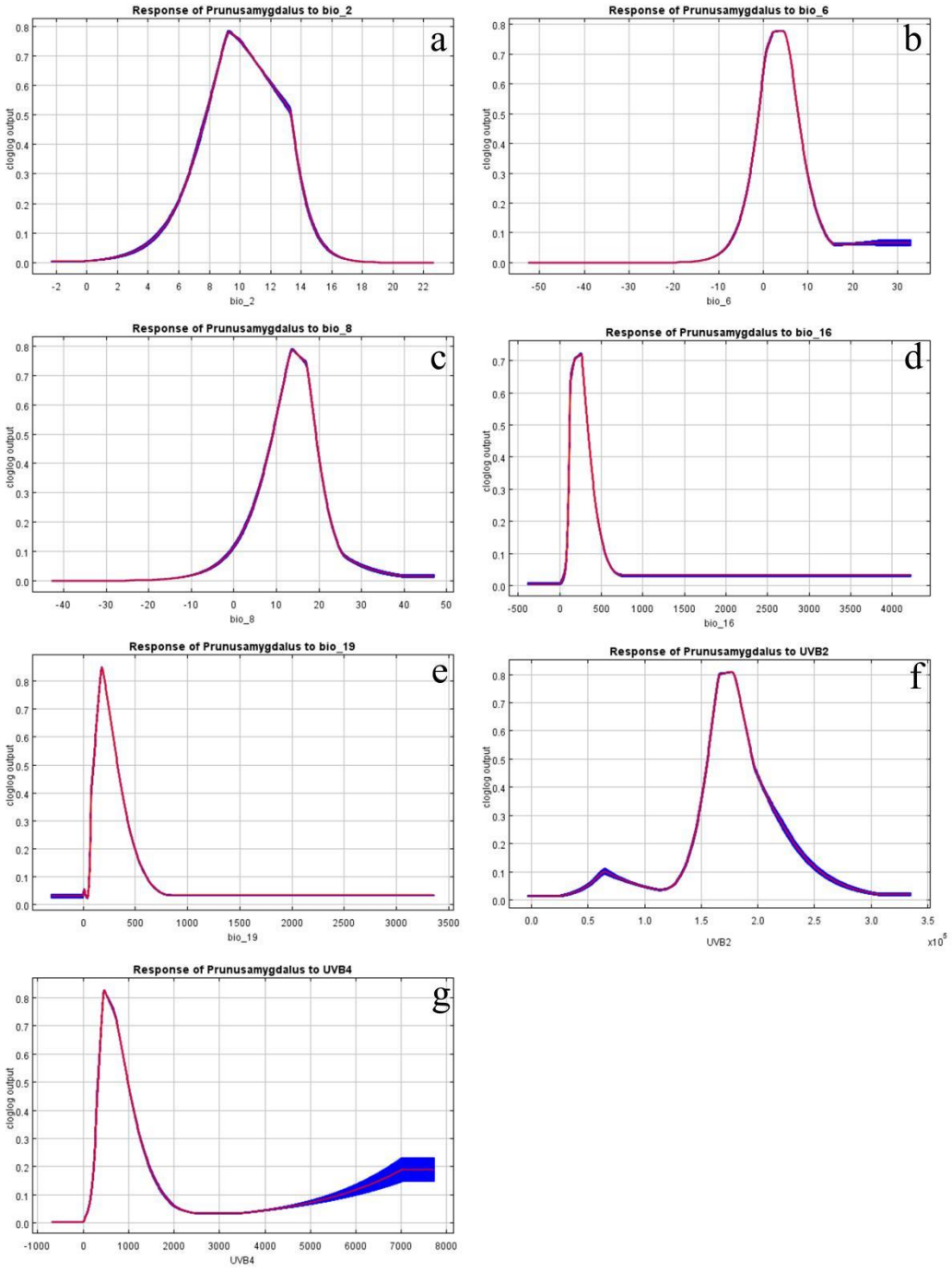


Figure S4. Response curves for key environmental predictors in the species distribution model for *P. amygdalus*. (a) BIO2, (b) BIO6, (c) BIO8, (d) BIO16, (e) BIO19, (f) UVB2, (g) UVB4. (The red line represents the average value of all candidate models, and the blue range indicates the standard deviation, the same below).

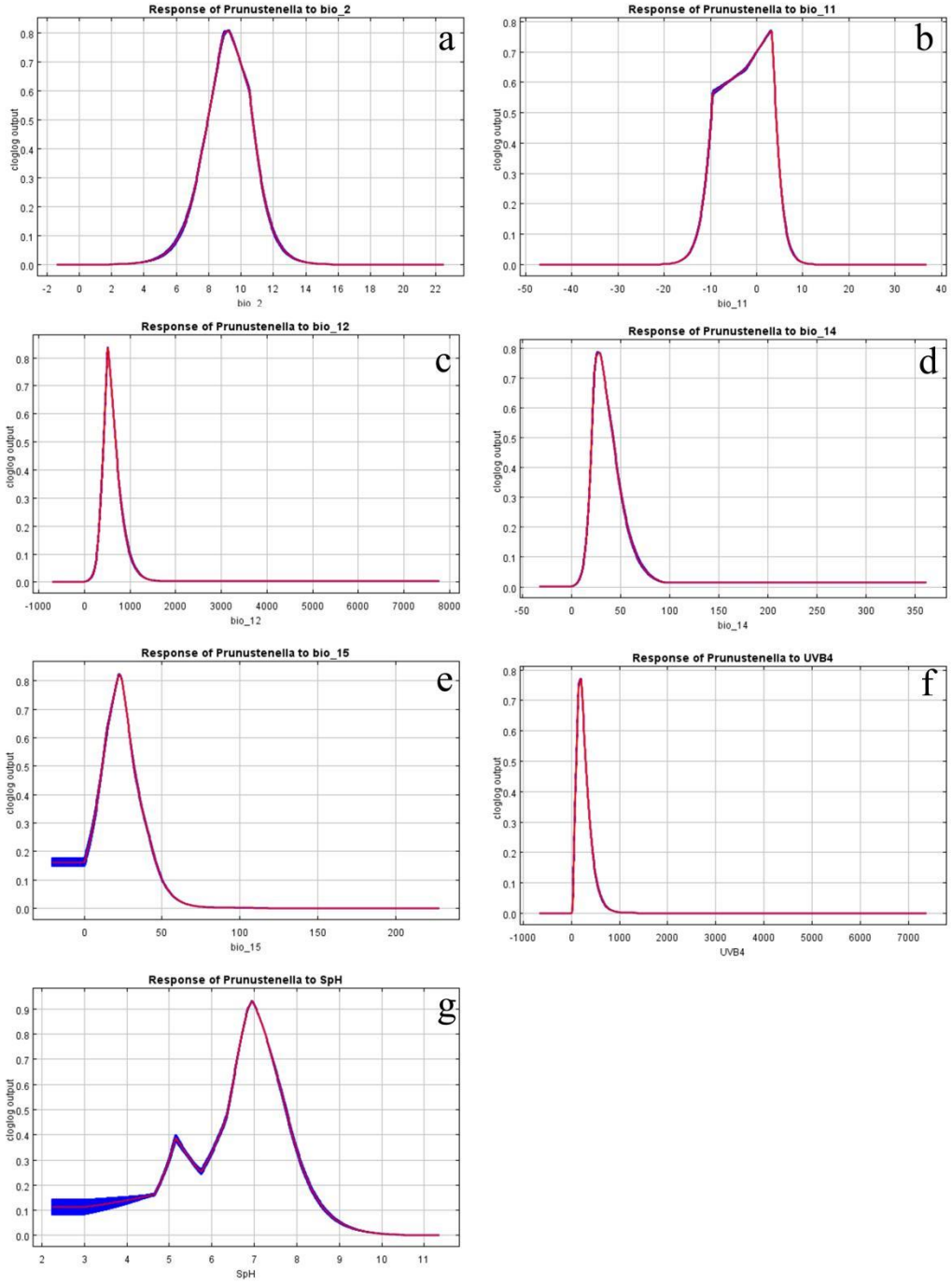


Figure S5. Response curves for key environmental predictors in the species distribution model for *P. tenella*. (a) BIO2, (b) BIO11, (c) BIO12, (d) BIO14, (e) BIO15, (f) UVB4, (g) SpH.

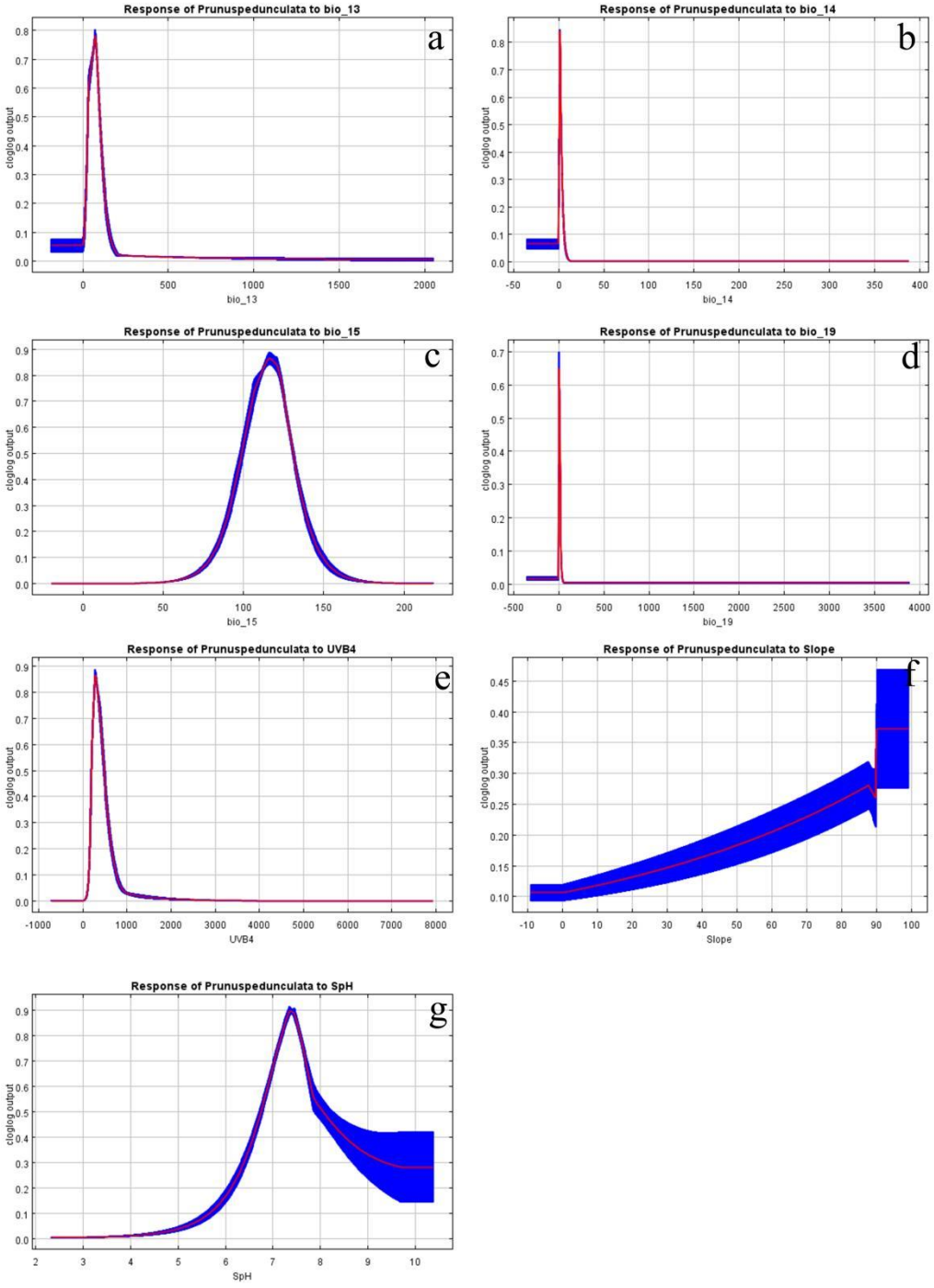


Figure S6. Response curves for key environmental predictors in the species distribution model for *P. pedunculata*. (a) BIO13, (b) BIO14, (c) BIO15, (d) BIO19, (e) UVB4, (f) Slope, (g) SpH.

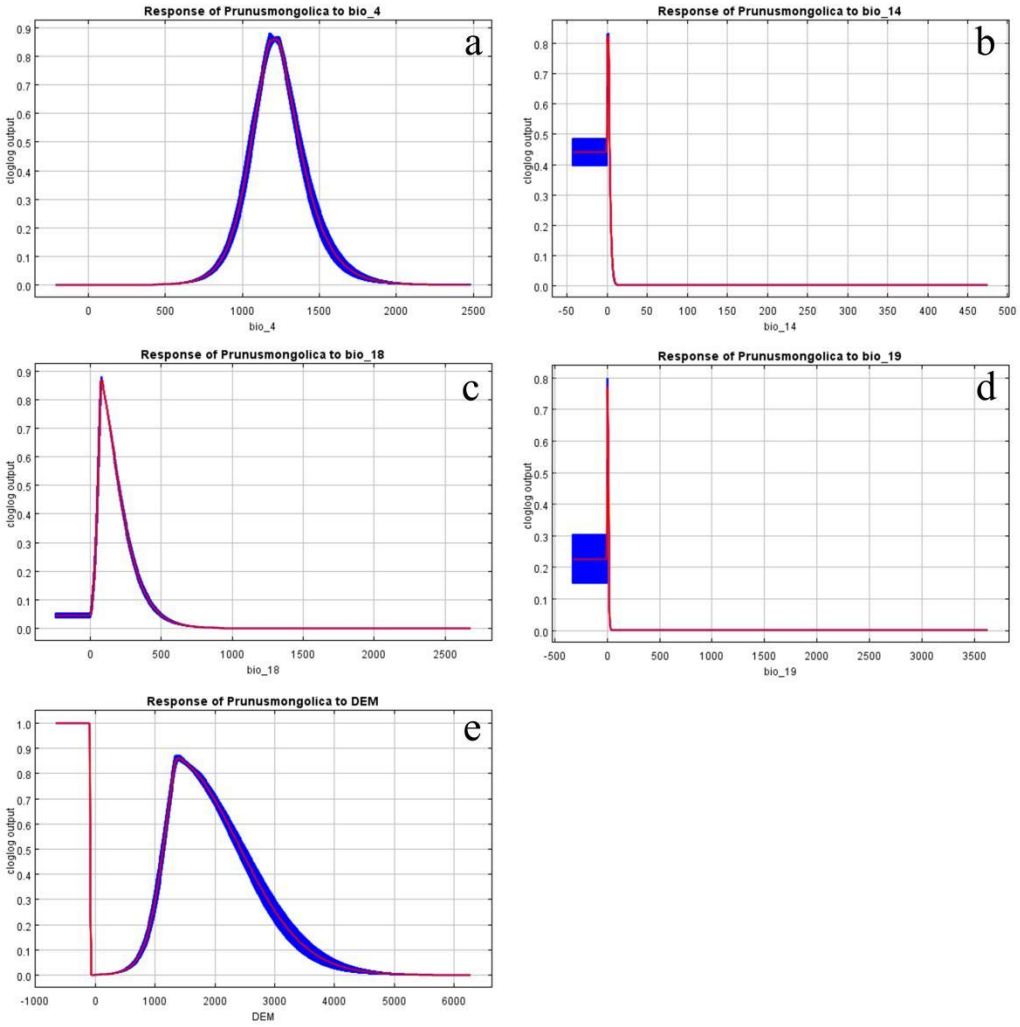


Figure S7. Response curves for key environmental predictors in the species distribution model for *P. mongolica*. (a) BIO4, (b) BIO14, (c) BIO18, (d) BIO19, (e) DEM.

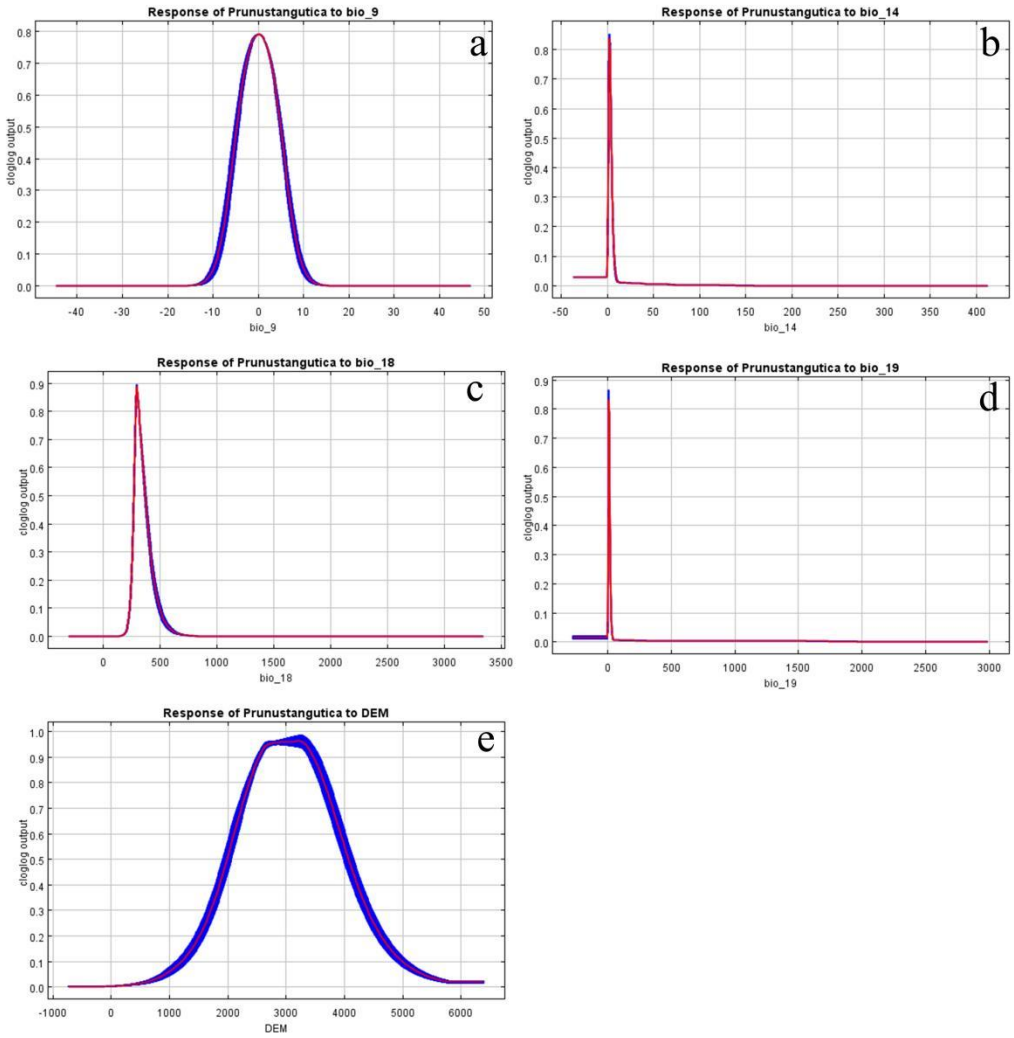


Figure S8. Response curves for key environmental predictors in the species distribution model for *P. tangutica*. (a) BIO9, (b) BIO14, (c) BIO18, (d) BIO19, (e) DEM.

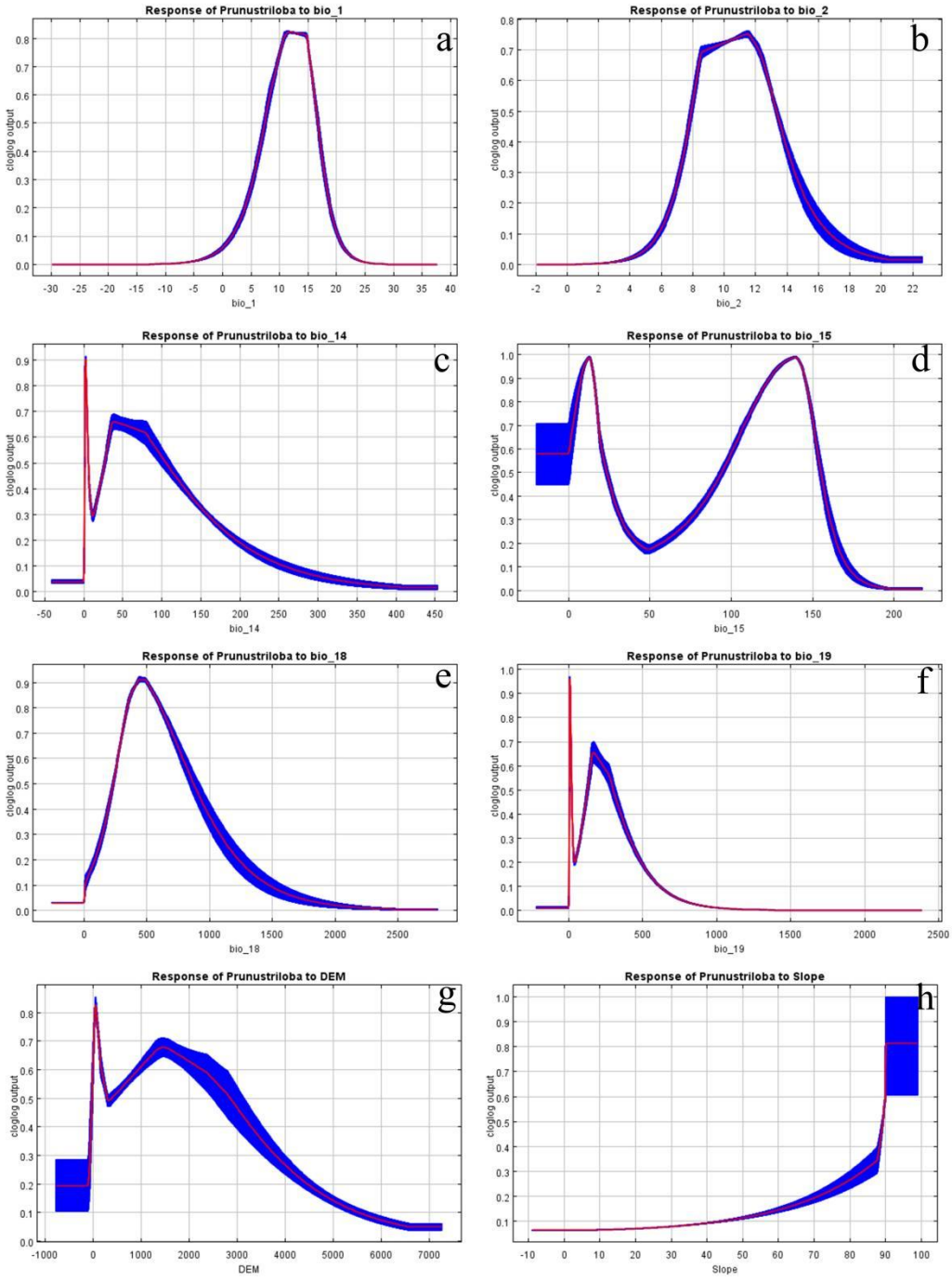


Figure S9. Response curves for key environmental predictors in the species distribution model for *P. triloba*. (a) BIO1, (b) BIO2, (c) BIO14, (d) BIO15, (e) BIO18, (f) BIO19 ,(g) DEM, (h) Slope.

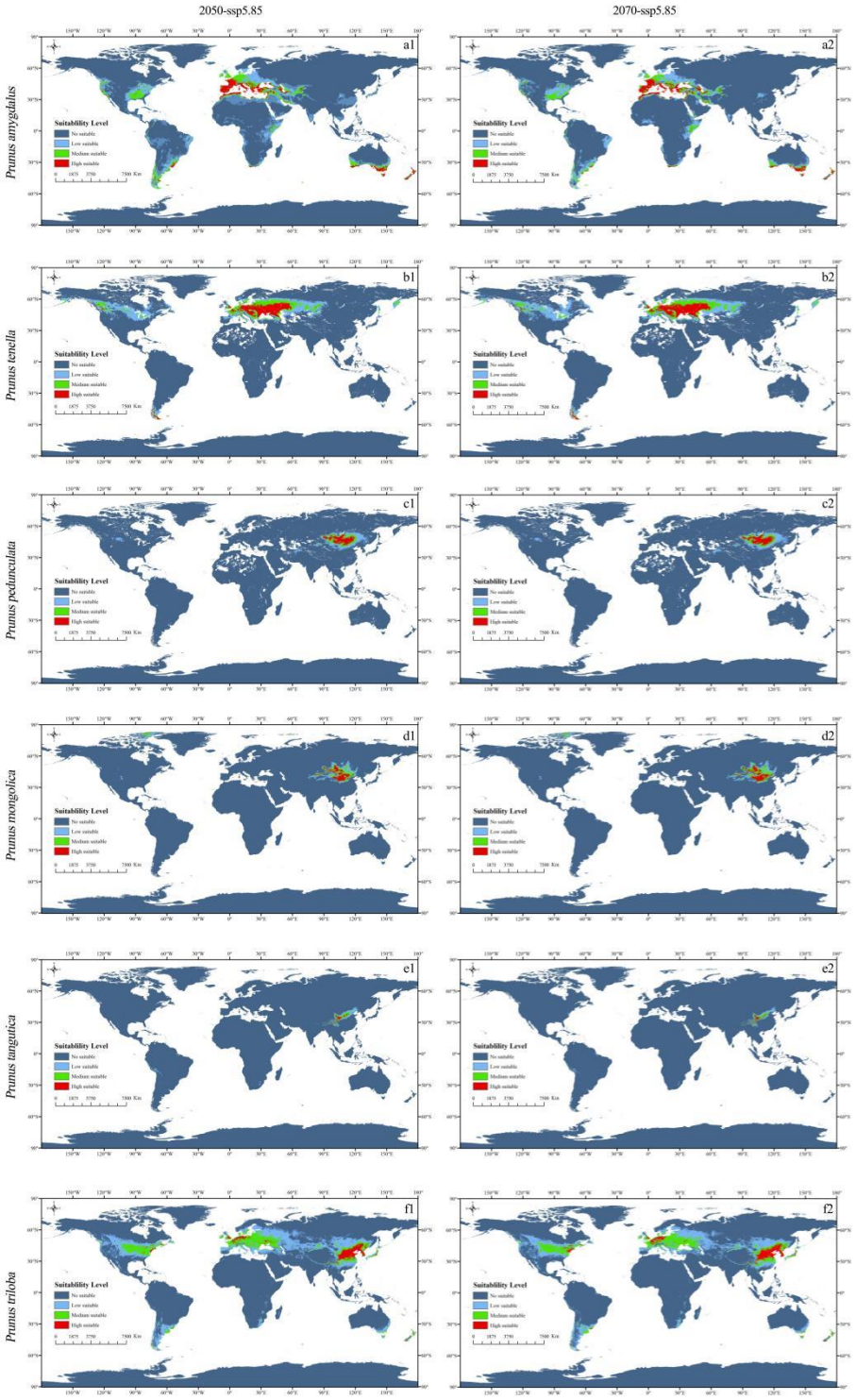


Figure S10. Response curves for key environmental predictors in the species distribution model for *P. triloba*. (a) BIO1, (b) BIO2, (c) BIO14, (d) BIO15, (e) BIO18, (f) BIO19 ,(g) DEM, (h) Slope. Dark blue, light blue, green and red indicate no suitability, low suitability, medium suitability and high suitability respectively.

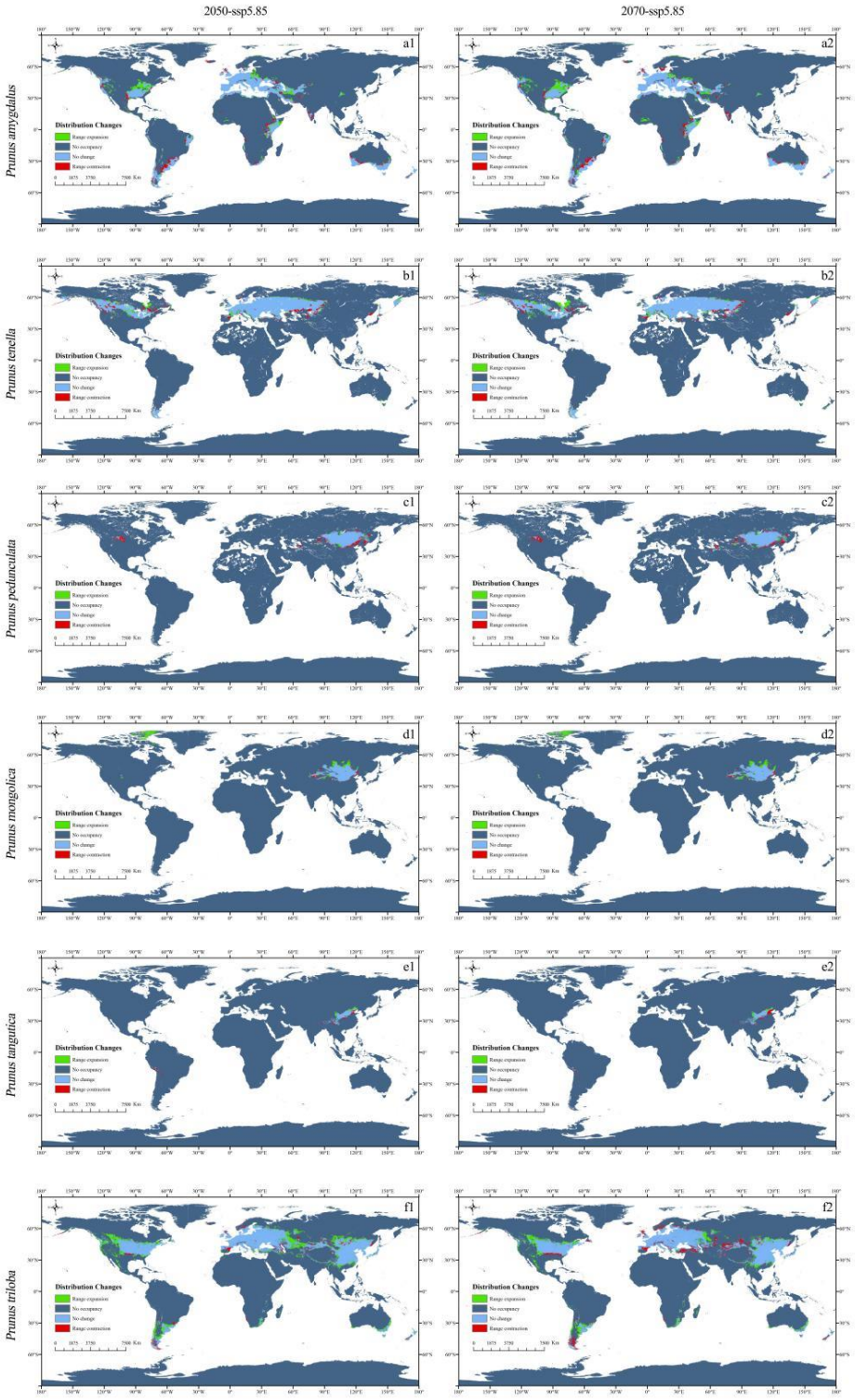


Figure S11. Future species distribution models (SDMs) of *Prunus* subg. *Amygdalus.* under climate change scenarios ssp5.85. Dark blue, light blue, green and red indicate no occupancy, range expansion, no changed and range contraction respectively.